A New Model for Automatic Raster-to-Vector Conversion

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Abstract

There is a growing need for automatic digitizing, or so called automated raster to vector conversion (ARVC) for maps. The benefit of ARVC is the production of maps that consume less space and are easy to search for or retrieve information from. In addition, ARVC is the fundamental step to reusing old maps at higher level of recognition. In this paper, a new model for an ARVC is developed.

The proposed model converts the "paper maps" into electronic formats for Geographic Information Systems (GIS) and evaluates the performance of the conversion process. To overcome the limitations of existing commercial vectorization software packages, the proposed model is customized to separate textual information, usually the cause of problems in the automatic conversion process, from the delimiting graphics of the map. The model retains the coordinates of the textual information for a later merge with the map after the conversion process. The propose model also addresses the localization problems in ARVC through the knowledge-supported intelligent vectorization system that is designed specifically to improve the accuracy and speed of the vectorization process. Finally, the model has been implemented on a symmetric multiprocessing (SMP) architecture, in order to achieve higher speed up and performance.

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